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NEWS	1		Web Page URLs for STN Seminar Schedule - N. America
NEWS	2		"Ask CAS" for self-help around the clock
NEWS	3	DEC 18	CA/CAPLUS pre-1967 chemical substance index entries enhanced with preparation role
NEWS	4	DEC 18	CA/CAPLUS patent kind codes updated
NEWS	5	DEC 18	MARPAT to CA/CAPLUS accession number crossover limit increased to 50,000
NEWS	6	DEC 18	MEDLINE updated in preparation for 2007 reload
NEWS	7	DEC 27	CA/CAPLUS enhanced with more pre-1907 records
NEWS	8	JAN 08	CHEMLIST enhanced with New Zealand Inventory of Chemicals
NEWS	9	JAN 16	CA/CAPLUS Company Name Thesaurus enhanced and reloaded
NEWS	10	JAN 16	IPC version 2007.01 thesaurus available on STN
NEWS	11	JAN 16	WPIDS/WPINDEX/WPIX enhanced with IPC 8 reclassification data
NEWS	12	JAN 22	CA/CAPLUS updated with revised CAS roles
NEWS	13	JAN 22	CA/CAPLUS enhanced with patent applications from India
NEWS	14	JAN 29	PHAR reloaded with new search and display fields
NEWS	15	JAN 29	CAS Registry Number crossover limit increased to 300,000 in multiple databases
NEWS	16	FEB 15	PATDPASPC enhanced with Drug Approval numbers
NEWS	17	FEB 15	RUSSIAPAT enhanced with pre-1994 records
NEWS	18	FEB 23	KOREAPAT enhanced with IPC 8 features and functionality
NEWS	19	FEB 26	MEDLINE reloaded with enhancements
NEWS	20	FEB 26	EMBASE enhanced with Clinical Trial Number field
NEWS	21	FEB 26	TOXCENTER enhanced with reloaded MEDLINE
NEWS	22	FEB 26	IFICDB/IFIPAT/IFIUDB reloaded with enhancements
NEWS	23	FEB 26	CAS Registry Number crossover limit increased from 10,000 to 300,000 in multiple databases
NEWS	24	MAR 15	WPIDS/WPIX enhanced with new FRAGHITSTR display format
NEWS	25	MAR 16	CASREACT coverage extended
NEWS	26	MAR 20	MARPAT now updated daily
NEWS	27	MAR 22	LWPI reloaded
NEWS	28	MAR 30	RDISCLOSURE reloaded with enhancements
NEWS	29	MAR 30	INPADOCDB will replace INPADOC on STN
NEWS	30	APR 02	JICST-EPLUS removed from database clusters and STN

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=> s "IONIC LIQUID"

276039 "IONIC"

494 "IONICS"

276297 "IONIC"

("IONIC" OR "IONICS")

768519 "LIQUID"

134100 "LIQUIDS"

869281 "LIQUID"

("LIQUID" OR "LIQUIDS")

1062233 "LIQ"

101681 "LIQS"

1101865 "LIQ"

("LIQ" OR "LIQS")

1528067 "LIQUID"

("LIQUID" OR "LIQ")

L1 9153 "IONIC LIQUID"

("IONIC" (W) "LIQUID")

=> S "CARBON NANOTUBE"

1268170 "CARBON"

27277 "CARBONS"

1277910 "CARBON"

("CARBON" OR "CARBONS")

32286 "NANOTUBE"

38732 "NANOTUBES"

40006 "NANOTUBE"

L2 ("NANOTUBE" OR "NANOTUBES")  
30402 "CARBON NANOTUBE"  
("CARBON" (W) "NANOTUBE")

=> S L1 and L2  
L3 108 L1 AND L2

=> s L3 and (gel or paste)  
507064 GEL  
104018 GELS  
547292 GEL  
(GEL OR GELS)  
94313 PASTE  
33110 PASTES  
106964 PASTE  
(PASTE OR PASTES)  
L4 39 L3 AND (GEL OR PASTE)

=> display L4 total ibib abs

L4 ANSWER 1 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN  
ACCESSION NUMBER: 2006:1339620 CAPLUS  
DOCUMENT NUMBER: 146:72123  
TITLE: Electrode structure for flexible display device and  
method for forming the same  
INVENTOR(S): Lim, Young-Nam  
PATENT ASSIGNEE(S): LG Philips Lcd Co., Ltd., S. Korea  
SOURCE: U.S. Pat. Appl. Publ., 8pp.  
CODEN: USXXCO  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2006286799	A1	20061221	US 2006-454579	20060615
PRIORITY APPLN. INFO.:			KR 2005-52076	A 20050616

AB A method for forming an electrode comprises forming a carbon nano tube of a gel state by mixing a carbon nano tube with an ionic liq. The method for forming an electrode for a flexible display device further comprises printing the carbon nano tube of a gel state on a substrate.

L4 ANSWER 2 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN  
ACCESSION NUMBER: 2006:1256098 CAPLUS  
TITLE: Voltammetric behavior of epinephrine on carbon  
nanotubes-ionic liquid  
paste modified glassy carbon electrodes  
AUTHOR(S): Yan, Quan-ping; Zhao, Fa-qiong; Zeng, Bai-zhao  
CORPORATE SOURCE: College of Chemistry and Molecular Sciences, Wuhan  
University, Wuhan, 430072, Peop. Rep. China  
SOURCE: Fenxi Kexue Xuebao (2006), 22(5), 523-526  
CODEN: FKXUFZ; ISSN: 1006-6144  
PUBLISHER: Fenxi Kexue Xuebao Bianjibu  
DOCUMENT TYPE: Journal  
LANGUAGE: Chinese  
AB A glassy carbon (GC) electrode modified by paste containing multi-walled carbon nanotubes (MWNTs) and room-temperature ionic liq. of 1-butyl-3-methylimidazoliumhexafluorophosphate (BMIMPF6) was prepared, and the electrochem. behaviors of epinephrine (EP) at this electrode were studied. It was found that EP could generate a sensitive anodic peak in pH 7 phosphate buffer and the paste made the peak move about 40 mV in neg. direction, compared with at MWNTs

modified GC electrode. Under the optimum conditions, the anodic peak current of EP was linear to its concentration over the range of  $5.0 \times 10^{-7}$  .apprx.  $2.0 \times 10^{-5}$  mol · L<sup>-1</sup> by cyclic voltammetry, the correlation coefficient was 0.998. The detection limit was estimated to be  $1.0 \times 10^{-7}$  mol · L<sup>-1</sup>. The method was applied to the determination of EP in injection samples.

L4 ANSWER 3 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:1229765 CAPLUS  
DOCUMENT NUMBER: 146:3682  
TITLE: Biosensor using bamboo-shaped carbon nanotube  
INVENTOR(S): Kurusu, Fumiyo; Goto, Masao; Karube, Masao; Kadota, Haruki; Tomita, Akihito  
PATENT ASSIGNEE(S): National Institute of Advanced Industrial Science & Technology, Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 9pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2006317360	A	20061124	JP 2005-142042	20050516
PRIORITY APPLN. INFO.:			JP 2005-142042	20050516
AB A structure-simplified biosensor for detecting substances in test sample without effects of electrochem. active compds. including reduced inhibitors is provided. The biosensor is composed of a sensor electrode in which the bamboo-shaped carbon nanotube was used as the electrode material. The biosensor is manufactured by using the detection electrode formed by filling up the cylindrical container with the paste-like material made by mixing the bamboo-shaped carbon nanotube with mineral oil, ionic liq., or macromol. binder resin.				

L4 ANSWER 4 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:1089096 CAPLUS  
DOCUMENT NUMBER: 145:439270  
TITLE: Gel compositions and manufacturing methods therefor  
INVENTOR(S): Masuda, Akira; Kato, Yasumi  
PATENT ASSIGNEE(S): Nisshin Spinning Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 17pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2006282418	A	20061019	JP 2005-101582	20050331
WO 2006112162	A1	20061026	WO 2006-JP303952	20060302
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ,				

CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH,  
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,  
KG, KZ, MD, RU, TJ, TM

PRIORITY APPLN. INFO.: JP 2005-101582 A 20050331

AB Gels contain carbon nanotubes and ionic liqs. of acid-base neutralized salts and have good dispersibility of carbon nanotubes. Thus, a gel contained carbon nanotubes and 1-methylimidazole benzoate.

L4 ANSWER 5 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:979388 CAPLUS

DOCUMENT NUMBER: 146:3298

TITLE: Optical and bioelectrochemical characterization of water-miscible ionic liquids based composites of multiwalled carbon nanotubes

AUTHOR(S): Tao, Wenyan; Pan, Dawei; Liu, Qian; Yao, Shouzhao; Nie, Zhou; Han, Buxing

CORPORATE SOURCE: State Key Laboratory of Chemo/Biosensing and Chemometrics, College of Chemistry and Chemical Engineering, Hunan University, Changsha, 410082, Peop. Rep. China

SOURCE: Electroanalysis (2006), 18(17), 1681-1688

CODEN: ELANEU; ISSN: 1040-0397

PUBLISHER: Wiley-VCH Verlag GmbH & Co. KGaA

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Acidic treated multiwalled carbon nanotubes (AMWNTs) were ground with water-miscible room temperature ionic liqs., 1-butyl-3-methylimidazolium tetrafluoroborate ([bmim]BF<sub>4</sub>), and resulted in AMWNTs-[bmim]BF<sub>4</sub> composite. Its elec.-ionic conductivity and optical properties were compared with the other two types of carbon materials-[bmim]BF<sub>4</sub> composites: pyrolytic graphite powder (PGP), pristine multiwalled carbon nanotubes (PMWNTs), through the ac impedance technol. and Raman spectroscopy. The impedance data show that AMWNTs-[bmim]BF<sub>4</sub> composite exhibits the highest conductivity Raman spectra study

exhibits that the [bmim]BF<sub>4</sub> can form gel with PMWNTs and AMWNTs but only form a viscous liquid with PGP. AMWNTs-[bmim]BF<sub>4</sub> gel modified GC electrode was applied in direct electrochem. of heme proteins (Hb and HRP) and its catalysis to the reduction of H<sub>2</sub>O<sub>2</sub> was investigated.

REFERENCE COUNT: 43 THERE ARE 43 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 6 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:930931 CAPLUS

DOCUMENT NUMBER: 146:237823

TITLE: Electrochemical characteristics of facile prepared carbon nanotubes-ionic liquid gel modified microelectrode and application in bioelectrochemistry

AUTHOR(S): Liu, Ying; Zou, Xiangqin; Dong, Shaojun

CORPORATE SOURCE: State Key Laboratory of Electroanalytical Chemistry, Changchun Institute of Applied Chemistry, Graduate School of the Chinese Academy of Sciences, Jilin, Changchun, 130022, Peop. Rep. China

SOURCE: Electrochemistry Communications (2006), 8(9), 1429-1434

CODEN: ECCMF9; ISSN: 1388-2481

PUBLISHER: Elsevier B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The C nanotubes (CNTs) based microelectrode (ME) by modifying CNTs-room

temperature ionic liq. (IL) gel at C fiber microelectrode (CFME) is easily prepared, which exhibits the typical cyclic voltammogram of ME with sigmoid shape and possesses good stability, high conductivity and enlarged current response and tunable dimension. The direct electron transfer of glucose oxidase was greatly promoted showing reversible electrochem. behavior even at high scan rate. The CNTs based ME also exhibits effectively electrocatalytic oxidized ability to biomols., e.g. dopamine (DA), ascorbic acid (AA) and dihydronicotinamide adenine dinucleotide. The obvious separation of oxidized peak potential for DA and AA makes it possible to selectively determine DA in presence of AA. These phenomena show that the CNTs based ME has promising potential to detect various species in vivo and in vitro.

REFERENCE COUNT: 45 THERE ARE 45 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 7 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:896697 CAPLUS

DOCUMENT NUMBER: 145:460975

TITLE:  $\pi$ -Electronic soft materials based on graphitic nanostructures

AUTHOR(S): Fukushima, Takanori

CORPORATE SOURCE: ERATO-SORST Aida Nanospace Project, National Museum of Emerging Science and Innovation, Japan Science and Technology Agency, 2-41 Aomi, Koto-ku, Tokyo, 135-0064, Japan

SOURCE: Polymer Journal (Tokyo, Japan) (2006), 38(8), 743-756  
CODEN: POLJB8; ISSN: 0032-3896

PUBLISHER: Society of Polymer Science, Japan

DOCUMENT TYPE: Journal; General Review

LANGUAGE: English

AB A review. This article focuses on our recent studies on the development of soft materials consisting of graphitic nanostructures. We found that single-walled carbon nanotubes, when suspended in imidazolium ion-based ionic liqs. and ground in an agate mortar, form phys. gels (bucky gels), where entangled nanotube bundles are exfoliated to give highly dispersed, much finer bundles. The use of polymerizable ionic liqs. as the gelling media leads to the formation of highly electroconductive polymer/nanotube composites, which show a dramatic enhancement in mech. properties. Bucky gels allow the fabrication of the first printable actuator that operates for a long time in air at low applied voltages. We also succeeded in the development of a new family of nanotubular graphite through self-assembly of amphiphilic hexabenzocoronene derivs. The nanotube consists of a graphitic wall formed from a great number of  $\pi$ -stacked hexabenzocoronene units, which provide a charge carrier transport pathway. Suitable chemical modifications of the amphiphile resulted in the formation of nanotubes with various interesting properties. Details of the design, properties, and scope of such  $\pi$ -electronic soft nanomaterials are described herein.

REFERENCE COUNT: 77 THERE ARE 77 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 8 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:778391 CAPLUS

DOCUMENT NUMBER: 145:365035

TITLE: Ferrocene Peapod Modified Electrodes: Preparation, Characterization, and Mediation of H<sub>2</sub>O<sub>2</sub>

AUTHOR(S): Sun, Nijuan; Guan, Lunhui; Shi, Zhujin; Li, Nanqiang; Gu, Zhennan; Zhu, Zhiwei; Li, Meixian; Shao, Yuanhua

CORPORATE SOURCE: College of Chemistry and Molecular Engineering, Peking University, Beijing, 100871, Peop. Rep. China

SOURCE: Analytical Chemistry (2006), 78(17), 6050-6057

CODEN: ANCHAM; ISSN: 0003-2700

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal  
LANGUAGE: English

AB Electrochem. properties of a new nanomaterial ferrocene (Fc) peapod, Fc-filled single-walled C nanotubes (Fc@SWNTs), were studied in an aqueous solution in detail by preparing different kinds of Fc@SWNTs-modified glassy C electrodes (Fc@SWNTs/GCE and Fc@SWNTs-gel/GCE). One pair of surface-confined redox waves corresponding to the couple of Fc/Fc<sup>+</sup> is obtained, which indicates that Fc encapsulated inside SWNTs retains electrochem. activity. The Fc@SWNTs-gel/GCE shows better electrochem. reversibility due to the existence of room temperature ionic liq. (RTIL). Also, it shows excellent mediation of H<sub>2</sub>O<sub>2</sub> based on Fc/Fc<sup>+</sup> used as electron-transfer mediators for oxidation of H<sub>2</sub>O<sub>2</sub> to O<sub>2</sub> and reduction to H<sub>2</sub>O, suggesting specific properties of Fc@SWNTs due to a combination of Fc and SWNTs. The interaction between Fc and SWNTs is also characterized by UV-visible-NIR spectrometry and Raman spectrometry. A Fc@SWNTs-based sensor for H<sub>2</sub>O<sub>2</sub> with a determination limit of 5  $\mu$ M is fabricated, and it shows good stability and reproducibility. This work not only demonstrates that the Fc peapod is a new kind of functional nanomaterial but also appears promising in constructing novel chemical and biosensors and fuel cells.

REFERENCE COUNT: 77 THERE ARE 77 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 9 OF 39 CAPLUS. COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:594526 CAPLUS

DOCUMENT NUMBER: 145:283498

TITLE: Voltammetric determination of uric acid with a glassy carbon electrode coated by paste of multiwalled carbon nanotubes and ionic liquid

AUTHOR(S): Yan, Quanping; Zhao, Faqiong; Li, Guangzu; Zeng, Baizhao

CORPORATE SOURCE: Department of Chemistry, Wuhan University, Wuhan, 430072, Peop. Rep. China

SOURCE: Electroanalysis (2006), 18(11), 1075-1080

CODEN: ELANEU; ISSN: 1040-0397

PUBLISHER: Wiley-VCH Verlag GmbH & Co. KGaA

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The voltammetric behavior of uric acid (UA) was studied at a multiwalled carbon nanotube-ionic liq. (i.e., 1-butyl-3-methylimidazolium hexafluorophosphate, BMIMPF<sub>6</sub>) paste coated glassy carbon electrode (MWNTs-BMIMPF<sub>6</sub>/GC). UA can effectively accumulate at this electrode and cause a sensitive anodic peak at .apprx.0.49 V (vs. SCE) in pH 4.0 phosphate buffer solns. Exptl. parameters influencing the response of the electrode, such as solution pH and accumulation time, are optimized for uric acid determination Under the optimum conditions, the anodic peak current is linear to UA concentration in the range

of

1.0 + 10<sup>-8</sup> M to 1.0 + 10<sup>-6</sup> M and 2.0 + 10<sup>-6</sup> M to 2.0

+ 10<sup>-5</sup> M. The detection limit is 5.0 + 10<sup>-9</sup> M for 180 s

accumulation on open circuit. The electrode can be regenerated by successively cycling in a blank solution for .apprx.3 min and exhibits good reproducibility. A 1.0 + 10<sup>-6</sup> M UA solution is measured for eight

times using the same electrode regenerated after every determination, and the relative standard deviation of the peak current is 3.2%. As for different electrodes fabricated by the same way the relative standard deviation (i.e., the electrode to electrode deviation) is 4.2%(n = 9). This method was applied to the determination of UA in human urine samples, and the recoveries

are

99-100.6%. Comparison is made between MWNTs-BMIMPF<sub>6</sub>/GC and MWNTs/GC. The MWNTs-BMIMPF<sub>6</sub>/GC exhibits higher sensitivity, selectivity and ratio of peak current to background current.

REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 10 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:582407 CAPLUS

DOCUMENT NUMBER: 146:22697

TITLE: A novel electrochemical biosensor for the detection of uric acid and adenine

AUTHOR(S): Zhao, Yifang; Ye, Tianle; Liu, Hui; Kou, Yuan; Li, Meixian; Shao, Yuanhua; Zhu, Zhiwei; Zhuang, Qiankun

CORPORATE SOURCE: Institute of Analytical Chemistry, College of Chemistry and Molecular Engineering, Peking

SOURCE: University, Beijing, 100871, Peop. Rep. China  
Frontiers in Bioscience (2006), 11(3), 2976-2982  
CODEN: FRBIF6; ISSN: 1093-4715  
URL: <http://www.bioscience.org/asp/getfile.asp?FileName=2006/v11/af/2026/2026.pdf>

PUBLISHER: Frontiers in Bioscience

DOCUMENT TYPE: Journal; (online computer file)

LANGUAGE: English

AB A novel electrochem. biosensor for the detection of uric acid and adenine was prepared based on a gel containing multi-walled carbon nanotubes and room-temperature ionic liq. of 1-octyl-3-methylimidazolium hexafluorophosphate. The electrochem. of uric acid and adenine was studied in this gel modified electrode. There was a significant two-way electrocatalytic activity upon both oxidation and reduction of uric acid. Similar to a bare glassy carbon electrode, uric acid undergoes a  $2e, 2H^+$  oxidation in phosphate buffer in the modified electrode. A diimine, the oxidation product of uric acid, was found to be an unstable intermediate, which was converted by a follow-up hydration reaction to an imine alc., with the reaction rate constant of  $8.5 \pm 0.3 \text{ M}^{-1} \cdot \text{s}^{-1}$  according to Nicholson's theory. Under optimum conditions, linear calibration graphs were obtained over the concentration range of  $1.0 \times 10^{-7} \text{ M}$  to  $1.0 \times 10^{-5} \text{ M}$  (uric acid) and  $1.0 \times 10^{-5} \text{ M}$  to  $6.0 \times 10^{-4} \text{ M}$  (adenine). Based on the signal-to-noise ratio of 3, the detection limits of the current technique was found to be as low as  $9.0 \times 10^{-8} \text{ M}$  (uric acid) and  $2.0 \times 10^{-6} \text{ M}$  (adenine), resp. This novel biosensor was successfully applied for the assay of uric acid in human urine. Because of its good stability and long-term durability, such a gel modified electrode can provide a simple and easy approach for sensitive detection of uric acid and adenine.

REFERENCE COUNT: 38 THERE ARE 38 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 11 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:376311 CAPLUS

DOCUMENT NUMBER: 145:75733

TITLE: High-performance carbon composite electrode based on an ionic liquid as a binder

AUTHOR(S): Maleki, Norouz; Safavi, Afsaneh; Tajabadi, Fariba

CORPORATE SOURCE: Department of Chemistry, College of Sciences, Shiraz University, Shiraz, 71454, Iran

SOURCE: Analytical Chemistry (2006), 78(11), 3820-3826  
CODEN: ANCHAM; ISSN: 0003-2700

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Ionic liq., n-octylpyridinium hexafluorophosphate (OPFP) was used to fabricate a new carbon composite electrode with very attractive electrochem. behavior. This type of carbon electrode was constructed using graphite mixed with OPFP as the binder. The electrode has combined advantages of edge plane characteristics of carbon nanotubes and edge plane pyrolytic graphite electrodes together with the low cost of carbon paste electrodes and robustness of metallic electrodes. It provides a remarkable increase in the rate of



electron transfer of different organic and inorg. electroactive compds. and offers a marked decrease in the overvoltage for biomols. such as NADH, dopamine, and ascorbic acid. It also circumvents NADH surface fouling effects as well as furnishing higher c.d. for a wide range of compds. tested. Depending on the choice of the electrolyte, the electrode can have the ion-exchange property and adsorptive characteristics of clay-modified electrodes. The proposed electrode thus allows sensitive, low-potential, simple, low-cost, and stable electrochem. sensing of biomols. and other electroactive compds. SEM images indicate significant improvement in the microstructure of the proposed electrode compared to carbon paste electrodes. Such abilities promote new opportunities for a wide range of electrochem. and biosensing applications.

REFERENCE COUNT: 56 THERE ARE 56 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 12 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:360353 CAPLUS

DOCUMENT NUMBER: 145:244067

TITLE: Electrochemical detection of nitric oxide on a SWCNT/RTIL composite gel microelectrode

AUTHOR(S): Li, Chang Ming; Zang, Jianfeng; Zhan, Dongping; Chen, Wei; Sun, Chang Q.; Teo, Ai L.; Chua, Yek. T.; Lee, Vee S.; Moochhala, Shabbir M.

CORPORATE SOURCE: School of Chemical and Biomedical Engineering, Nanyang Technological University, Singapore, 639798, Singapore

SOURCE: Electroanalysis (2006), 18(7), 713-718

CODEN: ELANEU; ISSN: 1040-0397

PUBLISHER: Wiley-VCH Verlag GmbH & Co. KGaA

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Single walled carbon nanotubes (SWCNT) and room temperature ionic liq. (RTIL) were used to make a gel microelectrode for studies of the oxidation of nitric oxide (NO). The Faraday response of the gel microelectrode was contributed from 2 components: an outside-surface microdisk and a thin-layer cell formed by inner porous electrode materials, and enhanced by the thin-layer effect. An EC mechanism, electrochem. NO oxidation followed by a chemical oxidation, was proposed. The gel microelectrode with a Nafion coating eliminated interferences from nitrite and some biomols., improved stability, and had a linear response range from 100 nM to 100  $\mu$ M.

REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 13 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:250194 CAPLUS

TITLE: Functional soft materials based on nano carbons

AUTHOR(S): Aida, Takuzo; Fukushima, Takanori

CORPORATE SOURCE: Department of Chemistry and Biotechnology, School of Engineering, The University of Tokyo, Tokyo, 113-8656, Japan

SOURCE: Abstracts of Papers, 231st ACS National Meeting, Atlanta, GA, United States, March 26-30, 2006 (2006), PMSE-125. American Chemical Society: Washington, D. C.

CODEN: 69HYEC

DOCUMENT TYPE: Conference; Meeting Abstract; (computer optical disk)

LANGUAGE: English

AB We have reported that an amphiphilic hexa-peri-hexabenzocoronene (HBC) self-assembles to form graphitic nanotubes, which turn elec. conductive upon oxidation. Spray deposition allows spontaneous alignment of HBC on a 2D substrate surface. Recently, we also found that a chiral HBC amphiphile forms highly qualified nanotubes that can be fished by using a glass hook

to give a macroscopic fiber consisting of one-dimensionally aligned nanotubes, which exhibit anisotropic elec. conduction. This is due to a strong interfacial interaction among the nanotubes with a very long aspect ratio. We have also reported that bundled single-walled carbon nanotubes (SWNTs) are exfoliated, upon being ground in ionic liqs. (ILs), to afford bucky gels, which can be converted into bucky plastics when ionic liqs. carry a polymerizable group. Because of a strong interfacial interaction of highly dispersed SWNTs with IL polymer matrixes and their crosslinked network structure, bucky plastics are highly reinforced mech. and elec. conductive.

L4 ANSWER 14 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:241388 CAPLUS  
DOCUMENT NUMBER: 146:132400  
TITLE: Functional soft materials based on nano carbons  
AUTHOR(S): Aida, Takuzo; Fukushima, Takanori  
CORPORATE SOURCE: ERATO-SORST AIDA NANOSPACE PROJECT & Department of Chemistry and Biotechnology, School of Engineering, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo, 113-8656, Japan  
SOURCE: PMSE Preprints (2006), 94, 188  
CODEN: PPMRA9; ISSN: 1550-6703  
PUBLISHER: American Chemical Society  
DOCUMENT TYPE: Journal; (computer optical disk)  
LANGUAGE: English

AB Chiral hexaperi-hexabenzocoronene (HBC) amphiphiles, bearing oxyalkylene and dodecyl chains, form graphitic nanotubes in a suspension, that can be fished using a glass hook to obtain macroscopic fibers consisting of one-dimensionally aligned nanotubes, which exhibit anisotropic elec. conduction. This is due to a strong interfacial interaction among the nanotubes with a long aspect ratio. Bundled single-walled carbon nanotubes (SWNTs) are exfoliated, upon being ground in ionic liqs. (ILs), to afford bucky gels, which can be converted into bucky plastics when ionic liqs. carry a polymerizable group, e.g., imidazolium ionic liq. bearing a methacrylate group. Because of a strong interfacial interaction of highly dispersed SWNTs with IL and crosslinked networks, bucky plastics have high mech. strength and are elec. conductive.

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 15 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:1205877 CAPLUS  
DOCUMENT NUMBER: 144:78503  
TITLE: Development of printable polymer actuator materials  
AUTHOR(S): Asaka, Kinji; Fukushima, Takanori; Aida, Takuzo  
CORPORATE SOURCE: National Institute of Advanced Industrial Science and Technology, Japan  
SOURCE: Mirai Zairyo (2005), 5(10), 14-19  
CODEN: MZIABA; ISSN: 1346-0986  
PUBLISHER: Enu-Ti-Esu  
DOCUMENT TYPE: Journal; General Review  
LANGUAGE: Japanese

AB A review including a gel containing carbon nanotubes and ionic liq.

L4 ANSWER 16 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:1018719 CAPLUS  
DOCUMENT NUMBER: 143:470846  
TITLE: Electric Double-Layer Capacitors Using "Bucky Gels" Consisting of an Ionic Liquid and Carbon Nanotubes  
AUTHOR(S): Katakabe, Toru; Kaneko, Taketo; Watanabe, Masayoshi;

CORPORATE SOURCE: Fukushima, Takanori; Aida, Takuzo  
Department of Chemistry and Biotechnology, Yokohama  
National University, and CREST-JST, Hodogaya-ku,  
Yokohama, 240-8501, Japan  
SOURCE: Journal of the Electrochemical Society (2005),  
152(10), A1913-A1916  
CODEN: JESOAN; ISSN: 0013-4651  
PUBLISHER: Electrochemical Society  
DOCUMENT TYPE: Journal  
LANGUAGE: English

AB Single-walled carbon nanotubes (SWNTs) formed  
gels after being ground with a room-temperature ionic  
liq. (RTIL). The gels were used as electrodes of elec.  
double-layer capacitors (EDLCs), and the RTIL was used as the electrolyte.  
The performance of the EDLCs was examined by charge-discharge expts. and was  
compared with that of the EDLCs using activated carbon electrodes and the  
RTIL electrolytes. The gels functioned as the electrodes over a  
wide composition range from 0.02 to 0.12 of SWNT/RTIL (wt/wt), and the retained  
capacitance increased with increasing the SWNT comps. The EDLCs with the  
SWNTs showed higher capacitance than that with the activated carbons in  
terms of the capacitance per unit surface area, though the gravimetric  
capacitance was lower. The gel electrodes can be fabricated as  
thick as 3 mm without a severe ohmic-drop problem, which may contribute to  
a simple cell structure. The changes in the performance of the  
SWNT-EDLCs, with or without the gelation, were apparent, and the gelation  
greatly contributed to the high performance. This is due to the formation  
of continuous SWNT and RTIL paths at the mol. level by the gelation.

REFERENCE COUNT: 29 THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 17 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:988393 CAPLUS

DOCUMENT NUMBER: 143:447602

TITLE: Preparation and nanoscopic internal structure of  
single-walled carbon nanotube-  
ionic liquid gel

AUTHOR(S): Kim, H. B.; Choi, J. S.; Lim, S. T.; Choi, H. J.; Kim,  
H. S.

CORPORATE SOURCE: Department of Polymer Science and Engineering, Inha  
University, Incheon, 402-751, S. Korea

SOURCE: Synthetic Metals (2005), 154(1-3), 189-192  
CODEN: SYMEDZ; ISSN: 0379-6779

PUBLISHER: Elsevier B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A gel-like paste was prepared by mixing  
1-n-butyl-3-methylimidazolium tetrafluoroborate, ([Bmim] BF<sub>4</sub>) a room  
temperature ionic liq. (RTIL) and single-walled  
carbon nanotubes (SWNT) and the internal structure and  
viscoelastic characteristics of the gels were studied. A  
suspension of BmimBF<sub>4</sub> containing 1% SWNT was prepared by grinding in an agate  
mortar, followed by centrifugation to obtain the paste. Rheol.  
properties of a purified SWNT-BmimBF<sub>4</sub> gel were measured using a  
rotational rheometer with parallel plate geometry, and compared with those  
of non-purified SWNT-ionic liq. gel from  
both steady shear and oscillatory shear mode tests. The gels  
show high shear thinning, dynamic yield stress, and frequency independent  
dynamics as evidence of strong interactions between the ionic  
liq. and SWNT. The gel structure was followed by a  
shear induced secondary structure in the high shear rate region.

REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 18 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:739372 CAPLUS  
TITLE: Synthesis of carbon nanotube  
gels with ionic liquids  
AUTHOR(S): Malhotra, Sanjay V.; Wang, Yubing; Iqbal, Zafar  
CORPORATE SOURCE: Chemistry and Environmental Science, New Jersey  
Institute of Technology, Newark, NJ, 07102, USA  
SOURCE: Abstracts of Papers, 230th ACS National Meeting,  
Washington, DC, United States, Aug. 28-Sept. 1, 2005  
(2005), INOR-420. American Chemical Society:  
Washington, D. C.  
CODEN: 69HFCL  
DOCUMENT TYPE: Conference; Meeting Abstract; (computer optical disk)  
LANGUAGE: English

AB Single Wall Carbon Nanotube (SWNT) gels were prepared by thermal treatment of nanotubes with ionic liqs. (ILs). These gels could be made with varying ratio of SWNTs and ILs, though a min. 0.5 wt % of SWNTs (to the total weight) was needed. Imidazolium based ionic liqs. with varied chain length and anions were employed, resulting in stable gel in each case. The products from each IL had different glass transition temperature compare to the ionic liq., as revealed by differential scanning calorimetry (DSC). Interestingly, solid ILs also resulted in stable gel on reaction with nanotubes, even in the absence of any solvent. The Transition electron microscopy (TEM) and SEM (SEM) showed that originally bundled pristine SWNTs are unbundled on treatment with ILs. The SWNT-IL nano-composites provide conducting material that are suitable for sensing devices.

L4 ANSWER 19 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:734804 CAPLUS  
DOCUMENT NUMBER: 144:341255  
TITLE: Novel soft composite materials composed of ionic liquids and single-walled carbon nanotubes  
AUTHOR(S): Fukushima, Takanori; Aida, Takuzo  
CORPORATE SOURCE: ERATO Aida Nanospace Project, Japan Science and Technology Agency (JST), Tokyo, 135-0064, Japan  
SOURCE: ACS Symposium Series (2005), 913(Ionic Liquids in Polymer Systems), 163-174  
CODEN: ACSMC8; ISSN: 0097-6156  
PUBLISHER: American Chemical Society  
DOCUMENT TYPE: Journal  
LANGUAGE: English

AB Pristine single-walled carbon nanotubes form gels when ground with imidazolium ion-based room-temperature ionic liqs. In the gels, the heavily entangled nanotube bundles are exfoliated to give much finer bundles. Phase-transition and rheol. properties suggest that the gels are formed by phys. crosslinking of nanotube bundles mediated by local mol. ordering of ionic liqs., rather than entanglement of nanotubes. Single-walled carbon nanotube gels of ionic liqs., thus obtained, are thermally stable and do not shrivel even under reduced pressure, because of the non-volatility of the ionic liqs., but readily undergo gel-to-solid transition on absorbent materials. The use of a polymerizable ionic liq. as the gelling medium allowed for the fabrication of an electroconductive polymer/nanotube composite material, which showed significant enhancement in dynamic hardness due to strong connectivity at the polymer/nanotube interface.

REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 20 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:696002 CAPLUS

DOCUMENT NUMBER: 143:164831  
 TITLE: Semiconductor devices provided with flexible HEMT transistors and manufacture of semiconductor layers by coating carbon nanotube /1-butyl-3-methylimidazolium tetrafluoroborate ionic gel composition  
 INVENTOR(S): Fukushima, Takanori; Aida, Takuzo; Tokuhiko, Atsushi; Iida, Kenji  
 PATENT ASSIGNEE(S): Japan Science and Technology Agency, Japan; Mitsui Chemicals Inc.  
 SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005209736	A	20050804	JP 2004-12469	20040120
PRIORITY APPLN. INFO.:			JP 2004-12469	20040120

AB The title semiconductor device employs an ionic gel composition containing in weight-ratio (1) 1 mg carbon nanotube (diameter  $\approx 1$  nm, length  $\approx 1$   $\mu$ m) and (2) 1000 mg 1-butyl-3-methylimidazolium tetrafluoroborate ionic liq. The gel composition is coated or printed on a substrate for a semiconductor layer in manufacture of transistors. The arrangement gives the semiconductor layers flexibility, high carrier mobility, and high frequency characteristics.

L4 ANSWER 21 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:661730 CAPLUS  
 DOCUMENT NUMBER: 144:293786  
 TITLE: Carbon nanotube gel  
 AUTHOR(S): Fukushima, Takanori  
 CORPORATE SOURCE: Japan Science and Technology Agency, Japan  
 SOURCE: Kobunshi (2005), 54(7), 480  
 CODEN: KOBUA3; ISSN: 0454-1138  
 PUBLISHER: Kobunshi Gakkai  
 DOCUMENT TYPE: Journal  
 LANGUAGE: Japanese

AB The polymerizable position-containing ionic liqs. were used along with carbon nanotubes to form bucky gel-based polymer composites showing a 20:1 polymer tensile strength increase, a 40:1 dynamic hardness increase, and a >1 S/cm elec. conductivity at room temperature under several % of carbon nanotube content. The 3-layered bucky gel actuators were formed from fluoropolymer supports and 2 different kinds of bucky gel laminate.

L4 ANSWER 22 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:593882 CAPLUS  
 DOCUMENT NUMBER: 143:173748  
 TITLE: Carbon nanotube processing using ionic liquids  
 AUTHOR(S): Fukushima, Takanori  
 CORPORATE SOURCE: Aida Nanospace Project, ERATO, Tokyo, 135-0064, Japan  
 SOURCE: Funtai Kogaku Kaishi (2005), 42(6), 384-389  
 CODEN: FKKADA; ISSN: 0386-6157  
 PUBLISHER: Funtai Kogakkai  
 DOCUMENT TYPE: Journal; General Review  
 LANGUAGE: Japanese

AB A review. Gelation of imidazolium ion-based ionic liqs. takes place after being ground with single-walled carbon

nanotubes. Transmission electron microscopy showed that heavily entangled nanotube bundles are untangled to give finer bundles during gelation. Differential scanning calorimetry, x-ray diffraction analyses, and rheol. studies indicated that the gels are formed by phys. crosslinking of the nanotube bundles, mediated by local mol. ordering of the ionic liqs., rather than by entanglement of the nanotubes. The use of polymerizable ionic liqs. as the gelling media allowed the fabrication of polymer/nanotube composites that are mech. reinforce and elec. conductive.

L4 ANSWER 23 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:570061 CAPLUS  
DOCUMENT NUMBER: 143:106089  
TITLE: Actuator element  
INVENTOR(S): Azumi, Kinji; Fukushima, Takanori; Aida, Takuzo; Ogawa, Atsuko  
PATENT ASSIGNEE(S): Japan Science and Technology Agency, Japan; National Institute of Advanced Industrial Science & Technology  
SOURCE: Jpn. Kokai Tokkyo Koho, 16 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005176428	A	20050630	JP 2003-409344	20031208
AU 2004298164	A1	20050623	AU 2004-298164	20041203
WO 2005057772	A1	20050623	WO 2004-JP18040	20041203
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1693950	A1	20060823	EP 2004-820166	20041203
R: DE, ES, FR, GB, IT, SE				
CN 1833352	A	20060913	CN 2004-80022687	20041203
US 2006266981	A1	20061130	US 2006-567740	20060210
PRIORITY APPLN. INFO.:			JP 2003-409344	A 20031208
			WO 2004-JP18040	W 20041203
AB The invention refers to an actuator element comprising a ion conducting layer formed from a gel composite of an ionic liq. and a polymer, and at least two electrode layers formed from a gel composite of carbon nanotubes and an ionic liq. and a polymer, wherein a voltage applied to the electrode layers cause them to deform.				

L4 ANSWER 24 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:390722 CAPLUS  
DOCUMENT NUMBER: 143:69731  
TITLE: Fully plastic actuator through layer-by-layer casting with ionic-liquid-based bucky gel  
AUTHOR(S): Fukushima, Takanori; Asaka, Kinji; Kosaka, Atsuko; Aida, Takuzo  
CORPORATE SOURCE: Aida Nanospace Project Exploratory Research for Advanced Technology (ERATO) Japan Science and

Technology Agency (JST), National Museum of Emerging  
Science and Innovation, Tokyo, 135-0064, Japan  
SOURCE: Angewandte Chemie, International Edition (2005),  
44(16), 2410-2413  
CODEN: ACIEF5; ISSN: 1433-7851  
PUBLISHER: Wiley-VCH Verlag GmbH & Co. KGaA  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
AB Liquid films: Ionic liqs. containing dispersed single-walled  
carbon nanotubes (bucky gels), allow the 1st  
layer-by-layer casting fabrication of a fully plastic actuator. This  
actuator adopts a simple three-layered configuration of soft electrodes  
and electrolyte layers (see picture) and can operate in air at low  
voltages.  
REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 25 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:336320 CAPLUS  
DOCUMENT NUMBER: 142:367811  
TITLE: Selective detection of dopamine in the presence of  
ascorbic acid and uric acid by a carbon  
nanotubes-ionic liquid  
gel modified electrode  
AUTHOR(S): Zhao, Yifang; Gao, Yuqian; Zhan, Dongping; Liu, Hui;  
Zhao, Qiang; Kou, Yuan; Shao, Yuanhua; Li, Meixian;  
Zhuang, Qiankun; Zhu, Zhiwei  
CORPORATE SOURCE: Institute of Analytical Chemistry, College of  
Chemistry and Molecular Engineering, Peking  
University, Beijing, 100871, Peop. Rep. China  
SOURCE: Talanta (2005), 66(1), 51-57  
CODEN: TLNTA2; ISSN: 0039-9140  
PUBLISHER: Elsevier B.V.  
DOCUMENT TYPE: Journal  
LANGUAGE: English

AB The electrochem. of dopamine (DA) was studied by cyclic voltammetry at a  
glassy carbon electrode modified by a gel containing multi-walled  
carbon nanotubes (MWNTs) and room-temperature ionic  
liq. of 1-octyl-3-methylimidazolium hexafluorophosphate (OMIMPF<sub>6</sub>).  
The thickness of gel on the surface of the electrode has to be  
controlled carefully because the charging currents increase with the  
modified layer being thicker. The anodic peaks of DA, ascorbic acid (AA)  
and uric acid (UA) in their mixture can be well separated since the peak  
potential of AA is shifted to more neg. values, while that of UA is  
shifted to more pos. values due to the modified electrode. At pH 7.08 the  
three peaks are separated ca. 0.20 and 0.15 V, resp.; hence DA can be  
determined in  
the presence of UA and more than 100 times excess of AA. Under optimum  
conditions linear calibration graphs were obtained over the DA concentration  
range  $1.0 \times 10^{-6}$  to  $1.0 \times 10^{-4}$  M. The detection limit of the  
current technique was found to be  $1.0 \times 10^{-7}$  M based on the  
signal-to-noise ratio of 3. The modified electrode has been successfully  
applied for the assay of DA in human blood serum. This work provides a  
simple and easy approach to selectively detect dopamine in the presence of  
ascorbic acid and uric acid.

REFERENCE COUNT: 37 THERE ARE 37 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 26 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:302597 CAPLUS  
DOCUMENT NUMBER: 142:358072  
TITLE: Electrolyte composition and photoelectric conversion  
devices and dye-sensitized solar cells using it  
INVENTOR(S): Usui, Hironori; Kurosawa, Yukihiro; Tanabe, Nobuo;

PATENT ASSIGNEE(S): Matsui, Hiroshi  
 SOURCE: Fujikura Ltd., Japan  
 Jpn. Kokai Tokkyo Koho, 10 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005093075	A	20050407	JP 2003-200628	20030723
PRIORITY APPLN. INFO.:			JP 2003-196560	A 20030714

AB The electrolyte composition contains an ionic liq. and cup-stacked carbon nanotubes. Preferably, the content of the carbon nanotubes is 0.05-10 weight% to the composition or to the ionic liq. The electrolyte composition is gelled by addition of the carbon nanotubes, and it has high photoelec. conversion efficiency. The photoelec. conversion devices and the solar cells using the electrolyte composition are also claimed.

L4 ANSWER 27 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:260431 CAPLUS  
 DOCUMENT NUMBER: 143:281829  
 TITLE: Direct proteins electrochemistry based on ionic liquid mediated carbon nanotube modified glassy carbon electrode  
 AUTHOR(S): Zhao, Qiang; Zhan, Dongping; Ma, Hongyang; Zhang, Meiqin; Zhao, Yifang; Jing, Ping; Zhu, Zhiwei; Wan, Xinhua; Shao, Yuanhua; Zhuang, Qiankun  
 CORPORATE SOURCE: College of Chemistry and Molecular Engineering, Peking University, Beijing, 100871, Peop. Rep. China  
 SOURCE: Frontiers in Bioscience (2005), 10(1), 326-334  
 CODEN: FRBIF6; ISSN: 1093-4715  
 URL: <http://www.bioscience.org/asp/getfile.asp?FileName=/2005/v10/af/1530/1530.pdf>  
 PUBLISHER: Frontiers in Bioscience  
 DOCUMENT TYPE: Journal; (online computer file)  
 LANGUAGE: English

AB A novel glassy carbon electrode modified by a gel containing multi-walled carbon nanotubes (MWNTs) and ionic liq. of 1-butyl-3-methylimidazolium hexafluorophosphate (BMIPF6) is reported. The gel is formed by grinding of MWNTs and BMIPF6. Such gel is then coated on the surface of a glassy carbon electrode. The authors have employed SEM, Fourier transform IR spectrometry (FTIR) and cyclic voltammetry to characterize the modified electrode. The direct electron transfers of Hb and catalase on the modified electrode have been observed and studied in detail electrochem. Hb is verified to be adsorbed on the modified electrode with the retention of conformation, which has been proved by microscopic FTIR. The electrochem. response of the adsorbed Hb on the modified electrode is very stable, and shows repeated changes in the different pH solns. It also has shown electrocatalysis to the reduction of oxygen and trichloroacetic acid. Catalase adsorbed on the gel modified electrode still keep activity to hydrogen peroxide. This work provides a simple and easy approach to construct biosensors based on the carbon nanotubes and ionic liqs.

REFERENCE COUNT: 50 THERE ARE 50 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 28 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:256621 CAPLUS  
 DOCUMENT NUMBER: 142:327739  
 TITLE: Double-layer capacitor materials using C nanotubes



INVENTOR(S): Fukushima, Takanori; Aida, Takuzo; Watanabe, Masayoshi  
 PATENT ASSIGNEE(S): Japan Science and Technology Agency, Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005079505	A	20050324	JP 2003-311270	20030903
PRIORITY APPLN. INFO.:			JP 2003-311270	20030903
AB The materials are gel compns. containing C nanotubes, which are cut into pieces by applying shear force in the presence of ionic liqs., and ionic liqs.				

L4 ANSWER 29 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2004:1076984 CAPLUS  
 DOCUMENT NUMBER: 142:47359  
 TITLE: Carbon nanotube dispersed ionic liquid gel for dielectric materials and production method thereof  
 INVENTOR(S): Ueno, Keiji; Tokuhiko, Atsushi; Maki, Kenji; Fukushima, Takanori; Aida, Takuzo  
 PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan; Japan Science and Technology Agency  
 SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004355989	A	20041216	JP 2003-153864	20030530
PRIORITY APPLN. INFO.:			JP 2003-153864	20030530
AB The invention relates to a dielec. material, suited for use in printed circuit boards, wherein a carbon nanotube dispersed ionic liq. gel provides high electrostatic capacity.				

L4 ANSWER 30 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2004:993079 CAPLUS  
 DOCUMENT NUMBER: 141:413066  
 TITLE: method for carbon nanotube orientation  
 INVENTOR(S): Iida, Kenji; Tokuhiko, Atsushi; Maki, Kenji; Fukushima, Takanori; Aida, Takuzo  
 PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004323342	A	20041118	JP 2003-307674	20030829
JP 3880560	B2	20070214		
PRIORITY APPLN. INFO.:			JP 2003-102401	A 20030407
AB Carbon nanotube-containing materials and gel				

materials consisting of carbon nanotube and ionic liq. are oriented by applied field. The method easily orients carbon nanotube in desired direction in short period of time.

L4 ANSWER 31 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:819831 CAPLUS  
DOCUMENT NUMBER: 141:322735  
TITLE: Light-heat conversion material and its processing method  
INVENTOR(S): Tokuhiko, Atsushi; Maki, Kenji; Iida, Kenji; Fukushima, Takanori; Aida, Takuzo  
PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004276535	A	20041007	JP 2003-74486	20030318
PRIORITY APPLN. INFO.:			JP 2003-74486	20030318

AB The material is a gel containing carbon nanotube (CNT) and ionic liq. and absorbs laser light to generate heat. The method involves (1) printing the material by screen printing, (2) jetting the material from a nozzle, or (3) irradiating laser to the material to remove substances excluding CNT to concentrate CNT. The material utilizes electrocond., heat radiation, mech. strength, etc., of CNT, and is suitable for conductive pattern formation inks, etc., and the gel state improves handling and processability of CNT.

L4 ANSWER 32 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:753320 CAPLUS  
DOCUMENT NUMBER: 141:252299  
TITLE: Carbon nanotube/polymer composites showing high rigidity and excellent mechanical and electric properties and their preparation  
INVENTOR(S): Fukushima, Takanori; Ogawa, Atsuko; Aida, Takuzo; Okabe, Akihiro  
PATENT ASSIGNEE(S): Japan Science and Technology Agency, Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004255481	A	20040916	JP 2003-46646	20030225
PRIORITY APPLN. INFO.:			JP 2003-46646	20030225

AB The composites, exhibiting high elec. conductivity and dynamic hardness, are prepared by fragmentation of (single-walled) carbon nanotubes in the presence of polymerizable ionic liqs. by shear force and polymerization of the ionic liqs. in the resultant gels.

L4 ANSWER 33 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:658591 CAPLUS  
TITLE: Novel soft materials from ionic liquids  
AUTHOR(S): Aida, Takuzo; Fukushima, Takanori

CORPORATE SOURCE: Department of Chemistry and Biotechnology, School of Engineering, The University of Tokyo, Tokyo, 113-8656, Japan  
SOURCE: Abstracts of Papers, 228th ACS National Meeting, Philadelphia, PA, United States, August 22-26, 2004 (2004), ORGN-326. American Chemical Society: Washington, D. C.  
CODEN: 69FTZ8

DOCUMENT TYPE: Conference; Meeting Abstract  
LANGUAGE: English

AB Ionic liqs. are interesting compds. for broad applications in green chemical and electrochem. Recently, we have found that grinding of single-walled carbon nanotubes (SWNTs) in imidazolium ionic liqs. results in the formation of phys. gels (bucky gels), in which SWNT bundles are highly untangled. On the basis of this discovery, we have succeeded in fabricating novel polymer composite materials called bucky plastics, which are highly reinforced and electroconductive even at low contents of SWNTs. We have also succeeded in the fabrication of elec. devices based on bucky gels. Here we report results of a detailed study on properties of these unique soft materials and further application of this hybridization method to other carbon and inorg. nanomaterials.

L4 ANSWER 34 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:417006 CAPLUS  
DOCUMENT NUMBER: 141:403418  
TITLE: Improved dye-sensitized solar cells using ionic nanocomposite gel electrolytes  
AUTHOR(S): Usui, Hiroki; Matsui, Hiroshi; Tanabe, Nobuo; Yanagida, Shozo  
CORPORATE SOURCE: Material Technology Laboratory, Fujikura Ltd., Koto-ku, Tokyo, 135-8512, Japan  
SOURCE: Journal of Photochemistry and Photobiology, A: Chemistry (2004), 164(1-3), 97-101  
CODEN: JPPCEJ; ISSN: 1010-6030  
PUBLISHER: Elsevier Science B.V.  
DOCUMENT TYPE: Journal  
LANGUAGE: English

AB In this study, an effect of addition of nanoparticles into a dye-sensitized solar cells (DSCs) ionic liq. electrolyte was explored. Carbon nanotubes, other carbon nanoparticles and titanium dioxide nanoparticles were dispersed individually into a 1-ethyl-3-methylimidazolium bis(trifluoromethylsulfonyl)imide (EMIm-TFSI) ionic liq. electrolyte by grinding. It was centrifuged to form an ionic nanocomposite gel electrolyte. The dispersion of nanoparticles resulted in a substantial increase in their viscosity. Their elec. conductivity increased as well. Notable effects were obtained in photocurrent d. and voltage measurements of the DSC assembled with them. Energy conversion efficiency of them was significantly improved and increased compared with a DSC using a bare ionic liq. electrolyte.

REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 35 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:370857 CAPLUS  
DOCUMENT NUMBER: 140:381299  
TITLE: Composition in gel form comprising carbon nanotube and ionic liquid and method for production thereof  
INVENTOR(S): Fukushima, Takanori; Ogawa, Atsuko; Aida, Takuzo  
PATENT ASSIGNEE(S): Japan Science and Technology Agency, Japan  
SOURCE: PCT Int. Appl., 19 pp.

DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

CODEN: PIXXD2

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004037720	A1	20040506	WO 2003-JP13162	20031015
W: CN, KR, US				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR				
JP 2004142972	A	20040520	JP 2002-307754	20021023
JP 3676337	B2	20050727		
EP 1555242	A1	20050720	EP 2003-756612	20031015
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, SK				
US 2005156144	A1	20050721	US 2003-517298	20031015
CN 1708454	A	20051214	CN 2003-80101950	20031015
PRIORITY APPLN. INFO.: JP 2002-307754 A 20021023				
WO 2003-JP13162 W 20031015				

AB A composition in the form of a gel comprising C nanotube and an ionic liq.; and a method for preparing the composition which comprises applying a shearing force to C nanotube in the presence of the ionic liq., to subdivide the C nanotube, and optionally subjecting the resulting product to centrifugal separation are described. The composition in the form of a gel is excellent in formability and can be formed only by forming it into a predetd. shape by means of printing, coating, extrusion or injection in a fluidized state provided by applying a slight external force, followed by removing the ionic liq. with a solvent or an absorbing material. The composition allows the forming of a C nanotube with ease and without detriment to the characteristics thereof.

L4 ANSWER 36 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:282642 CAPLUS

DOCUMENT NUMBER: 141:27156

TITLE: Novel soft materials composed of single-walled carbon nanotubes and ionic liquids

AUTHOR(S): Fukushima, Takanori

CORPORATE SOURCE: ERATO, Japan Science and Technology Corporation, Japan

SOURCE: Kino Zairyo (2004), 24(3), 57-64

CODEN: KIZAEP; ISSN: 0286-4835

PUBLISHER: Shi Emu Shi Shuppan

DOCUMENT TYPE: Journal

LANGUAGE: Japanese

AB Gelation of imidazolium ion-based ionic liqs. takes place after mixing with single-walled carbon nanotubes. The imidazolium-based ionic liqs. studied include 1-Ethyl-3-methylimidazolium tetrafluoroborate (EMIBF4), 1-n-Butyl-3-methylimidazolium tetrafluoroborate (BMIBF4), 1-n-Butyl-3-methylimidazolium hexafluorophosphate (BMIPF6), 1-Ethyl-3-methylimidazolium bis(triflyl)amide (EMITSFSI), 1-Butyl-3-methylimidazolium bistriflimide (BMITFSI), and 1-methyl-3-[4-[(1-oxo-2-propenyl)oxy]butyl]-imidazolium hexafluorophosphate (ABMIPF6). TEM data showed that heavily entangled nanotube bundles become untangled into finer bundles upon gelation. DSC, x-ray diffraction, and rheol. studies indicate that the gels (bucky gels) are formed by phys. crosslinking of the nanotube bundles, mediated by local mol. ordering of the ionic liqs., rather than by entanglement of the nanotubes. The use of ionic liqs. as gelling media allowed for fabrication of nanotube composites that are mech. reinforced and elec. conductive. The

carbon nanotube-based soft materials of interest for use  
as components of electronic devices.

L4 ANSWER 37 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:234281 CAPLUS

DOCUMENT NUMBER: 141:27155

TITLE: Novel soft materials composed of ionic  
liquids and single-walled carbon  
nanotubes

AUTHOR(S): Fukushima, Takanori; Aida, Takuzo

CORPORATE SOURCE: Aida Nanospace Project, Exploratory Research for  
Advanced Technology, National Museum of Emerging  
Science and Innovation, Japan Science and Technology  
Agency (JST), Tokyo, 135-0064, Japan

SOURCE: Polymer Preprints (American Chemical Society, Division  
of Polymer Chemistry) (2004), 45(1), 306  
CODEN: ACPPAY; ISSN: 0032-3934

PUBLISHER: American Chemical Society, Division of Polymer  
Chemistry

DOCUMENT TYPE: Journal; (computer optical disk)

LANGUAGE: English

AB Gelation of imidazolium ion-based ionic liqs. takes  
place after mixing with single-walled carbon nanotubes  
. The imidazolium-based ionic liqs. studied include  
1-Ethyl-3-methylimidazolium tetrafluoroborate (EMIBF<sub>4</sub>),  
1-n-Butyl-3-methylimidazolium tetrafluoroborate (BMIBF<sub>4</sub>),  
1-n-Butyl-3-methylimidazolium hexafluorophosphate (BMIPF<sub>6</sub>),  
1-Ethyl-3-methylimidazolium bis(triflyl)amide (EMITSFSI),  
1-Butyl-3-methylimidazolium bistriflimide (BMITFSI), and  
1-methyl-3-[4-[(1-oxo-2-propenyl)oxy]butyl]-imidazolium  
hexafluorophosphate (ABMIPF<sub>6</sub>). TEM data showed that heavily entangled  
nanotube bundles become untangled into finer bundles upon gelation. DSC,  
x-ray diffraction, and rheol. studies indicate that the gels  
(bucky gels) are formed by phys. crosslinking of the nanotube  
bundles, mediated by local mol. ordering of the ionic  
liqs., rather than by entanglement of the nanotubes. The use of  
ionic liqs. as gelling media allowed for fabrication of  
nanotube composites that are mech. reinforced and elec. conductive. The  
carbon nanotube-based soft materials of interest for use  
as components of electronic devices.

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 38 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:229272 CAPLUS

TITLE: Novel soft materials composed of ionic  
liquids and single-walled carbon  
nanotubes

AUTHOR(S): Fukushima, Takanori; Aida, Takuzo

CORPORATE SOURCE: Aida Nanospace Project, Exploratory Research for  
Advanced Technology, Japan Science and Technology  
Agency, Tokyo, 135-0064, Japan

SOURCE: Abstracts of Papers, 227th ACS National Meeting,  
Anaheim, CA, United States, March 28-April 1, 2004  
(2004), POLY-637. American Chemical Society:  
Washington, D. C.  
CODEN: 69FGKM

DOCUMENT TYPE: Conference; Meeting Abstract

LANGUAGE: English

AB We found that gelation of imidazolium ion-based ionic  
liqs. takes place after being ground with single-walled  
carbon nanotubes. Transmission electron microscopy  
showed that heavily entangled nanotube bundles are untangled to give finer  
bundles upon gelation. DSC, XRD and rheol. studies indicated that the

gels (bucky gels) are formed by phys. crosslinking of the nanotube bundles, mediated by local mol. ordering of the ionic liqs., rather than by entanglement of the nanotubes. The use of polymerizable ionic liqs. as the gelling media allowed for the fabrication of polymer/nanotube composites (bucky plastics) that are mech. reinforced and elec. conductive. Scope and applications of such new class of carbon nanotube-based soft materials will be reported.

L4 ANSWER 39 OF 39 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:487828 CAPLUS

DOCUMENT NUMBER: 139:198366

TITLE: Molecular Ordering of Organic Molten Salts Triggered by Single-Walled Carbon Nanotubes

AUTHOR(S): Fukushima, Takanori; Kosaka, Atsuko; Ishimura, Yoji; Yamamoto, Takashi; Takigawa, Toshikazu; Ishii, Noriyuki; Aida, Takuzo

CORPORATE SOURCE: National Museum of Emerging Science and Innovation, Japan Science and Technology Corporation (JST), Exploratory Research for Advanced Technology (ERATO), 2-41 Aomi, Koto-ku, Tokyo, 135-0064, Japan

SOURCE: Science (Washington, DC, United States) (2003), 300(5628), 2072-2075

CODEN: SCIEAS; ISSN: 0036-8075

PUBLISHER: American Association for the Advancement of Science

DOCUMENT TYPE: Journal

LANGUAGE: English

AB When mixed with imidazolium ion-based room-temperature ionic liq., pristine single-walled carbon nanotubes formed gels after being ground. The heavily entangled nanotube bundles were untangle within the gel to form much finer bundles. Phase transition and rheol. properties suggest that the gels are formed by phys. crosslinking of the nanotube bundles, mediated by local mol. ordering of the ionic liqs. rather than by entanglement of the nanotubes. The gels were thermally stable and did not shrivel, even under reduced pressure resulting from the nonvolatility of the ionic liqs., but they would readily undergo a gel-to-solid transition on absorbent materials. The use of a polymerizable ionic liq. as the gelling medium allows for the fabrication of a highly electroconductive polymer/nanotube composite material, which showed a substantial enhancement in dynamic hardness.